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**RURAL FINANCE IN NIGER:
CREDIT UNIONS IN THE FINANCIAL MARKETS
OF ZINDER AND MARADI DEPARTMENTS**

by

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Abstract

Credit unions, known in Niger as Caisses Populaires d'Epargne et de Crédit (CPECs), started in rural areas of Niger with the departments. The purpose of this study was to examine the role of credit unions (CUs) in the Nigerien financial landscape, especially in the rural areas of Zinder and Maradi where they first started. For this study, CU members and non-members in nine villages and towns were surveyed. In each case, an equal number of men and women were interviewed.

The main revelation from the survey is that informal finance is still prevalent and even predominant in rural Niger. People still rely heavily on the informal sector for both savings and loans services. Tontines which play an important social function would not be expected to disappear with the advent of credit unions. What is encouraging is the realization that credit unions are in fact complementing the informal sector. They are providing a much needed alternative for financial intermediation, especially to a rural population who has been prevented for too long from accessing formal financial services.

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I. INTRODUCTION

1. Purpose of the Study

Credit unions (CUs), known in Niger as Caisses Populaires d'Epargne et de Crédit (CPECs), started in rural areas of Niger with the departments of Zinder and then Maradi. The purpose of this study is to examine the role of credit unions in the Nigerien financial landscape, especially in the rural areas where they first started. For this study, nine villages and towns with CPEC establishments were chosen in Zinder and Maradi departments. The study surveyed both members and non-members in each village or town. In each case, an equal number of men and women were interviewed. The survey was delivered through a questionnaire designed to collect information on the individual and his/her household's general characteristics, i.e. age, marital status, position in the household, household size, socioeconomic indicators, occupation (agriculture, trade and other enterprises, wage work), physical and financial assets holdings, as well as participation and/or knowledge of the local credit union. In addition to the main questionnaire, another questionnaire was administered to the local authorities to collect general village information and price data for agricultural commodities and other products, as well as complementary information needed to process the data that would be generated by the main questionnaire.

2. Organization of the Study

This paper deals with the results of the household surveys which were carried out during the months of March and April 1995, which correspond to the "off-season" in rural Niger. This made it a perfect time for such an activity. Sampling during this period is sure to include farmers, the most important group of people in the villages, who would have otherwise been away in the fields had the survey been carried at any other period of the year. Village residents who were credit union members were chosen at random from the organization files and their immediate neighbor of the same gender was then selected to be interviewed for the non-member sub-sample. The results of the individual interviews in the Zinder department will be presented in Section II, followed by findings from the survey in the Maradi department in Section III. A summary of the descriptive statistics will be provided in Section IV. Finally, the role of the credit unions in providing members' access to financial services and loans in particular will be tested in Section V, before the concluding comments in are presented in Section VI.

II. ZINDER DEPARTMENT SURVEY RESULTS

Zinder department is located 920 km. from Niamey, the capital of Niger, and is the department where the first credit unions were created in 1990, following recommendations from an Ohio State University feasibility study in 1991 to determine the potentiality in the region¹. Several villages were then surveyed including Kantché, Matameye, and Dungas which are part of the current study. For this survey three villages (Kantché, Dungas, Sassoumbroum) and two towns (Matameye, and Zinder-ville) were selected in Zinder department. An effort was made to not only interview an equal number of credit union members and non-members but also an equal number of men and women in each category. The strategy was important in order to make a useful comparison of member and non-member characteristics and also test for any difference in men and women's behavior.

The general characteristics of the villages surveyed are presented in Table 1. The predominant ethnic group in Zinder department is Hausa which is also the language spoken in Neighboring Nigeria. This greatly facilitates the great amount of exchange and trade that takes place between Niger and Nigeria. The average village population was less than 10,000 inhabitants. Zinder, the former capital of Niger, and the third largest town had a population of 119,838 inhabitants (Ministry of Plan, Niger, 1988 census of the population).

Table 1. Household and Village Characteristics in Zinder Department.

| | Kantché | Matameye | Dungas | Sassoumbroum | Zinder |
|--------------------------------|---------|----------|--------|--------------|---------|
| Sample size | 80 | 80 | 81 | 80 | 79 |
| Men in sample | 41 | 42 | 42 | 40 | 37 |
| Women in sample | 39 | 38 | 39 | 40 | 42 |
| Village/Town population | 9,000 | 7,337 | 8,196 | -- | 110,827 |
| Number of men | 2,000 | 3,560 | 2,400 | -- | -- |
| Number of women | 4,000 | 3,777 | 2,700 | -- | -- |
| Village/Town active population | 6,000 | 3,961 | 5,100 | -- | -- |
| Distance from main road in km | 0 | 28 | 46 | 75 | 0 |
| Predominant ethnic group | Hausa | Hausa | Hausa | Hausa | Hausa |

Sources: The Ohio State University (OSU) 1995 survey and Niger Ministry of Economy and Finance 1988 General Census of the Population.

-- Not available

¹ Cuevas E. Carlos, "Potentiel de développement des Caisses Populaires d'Epargne et de Crédit dans la Région Zinder du Niger", Report to the World Council of Credit Unions (WOCCU), January 30, 1992.

1. General Information on the Sample

General information obtained from the sample of 400 individuals in Zinder are summarized in Table 2. The data reveal that, irrespective of gender, 61 percent of respondents were household heads, had an average age of 44 years, and 47.5 percent were educated i.e. had some degree of formal education and could read and write in either French, Hausa, or Arabic. Farmers accounted for 41.5 percent of the sample, and more than half the respondents (57.2 percent) held a secondary occupation, usually as artisans or in other independent work. Traders and entrepreneurs made up 29.8 percent of the sample. Only a few people (13 percent) rented the land they farmed. Payment ranged from no charge to as much as FCFA 50,000² as annual rental fee.

Table 2. General Characteristics of the Sample in Zinder Department.

| | Total sample (N=400) | | CU members (N ₁ =201) | | Non members (N ₂ =199) | |
|-----------------------------|----------------------|-------------|----------------------------------|-------------|-----------------------------------|-------------|
| | Frequency | % of sample | Frequency | % of sample | Frequency | % of sample |
| Household head | 243 | 60.8 | 124 | 61.7 | 119 | 59.8 |
| Principal occupation | | | | | | |
| 1. Farmer | 166 | 41.5 | 77 | 38.3 | 89 | 44.7 |
| 2. Herder | 98 | 24.5 | 40 | 19.9 | 58 | 29.1 |
| 3. Trader/entrepreneur | 119 | 29.7 | 76 | 37.8 | 43 | 21.6 |
| 4. Other | 17 | 4.3 | 8 | 4.0 | 9 | 4.5 |
| Secondary occupation | 229 | 57.2 | 130 | 64.7 | 99 | 49.7 |
| Educated | 190 | 47.5 | 109 | 54.2 | 81 | 40.7 |
| Rent farm land | 52 | 13.0 | 22 | 10.9 | 30 | 15.1 |

Source: The Ohio State University (OSU) survey, 1995.

The general characteristics of respondents by groups show that more non-members list farming as their principal occupation (44.7 percent) compared to 38.3 percent of credit union members who were farmers. There were also more herders among the non-member sub-sample (29.1 percent) than among the member sub-sample (19.9 percent). However, many more members held a secondary occupation (64.7 percent) than members (49.7 percent). Also, more members received some type of formal education (54.2 percent) than non-members (40.7 percent).

² The average official exchange rate between Franc CFA (FCFA), the currency used in Niger and several other Francophone African countries, and the US dollar was \$1=FCFA 500 after the devaluation which occurred in 1994.

Table 3. Socio-economic Indicators of the Sample in Zinder Department (N=400)

| | Zinder N=400 | |
|------------------------------|--------------|-------------|
| | Frequency | % of sample |
| A. Housing | | |
| Live in own house | 250 | 62.5 |
| B. Construction | | |
| Mud house | 311 | 77.8 |
| Thatch house | 12 | 3.0 |
| Cement blocks | 75 | 18.7 |
| Other construction material | 2 | 0.5 |
| Mud floor | 191 | 47.7 |
| Cement floor | 206 | 51.5 |
| Other | 3 | 0.7 |
| Corrugated sheet | 161 | 40.2 |
| Traditional roof | 226 | 56.5 |
| Thatch roof | 10 | 2.5 |
| Other roof type | 3 | 0.7 |
| Private latrine | 303 | 75.7 |
| C. Public Services | | |
| Electricity | 90 | 22.5 |
| Cook w/coal | 3 | 0.7 |
| Cook w/wood | 375 | 93.7 |
| Cook w/kerosene | 5 | 1.2 |
| Cook w/millet stem | 3 | 0.7 |
| Cook w/gas | 0.00 | 0.00 |
| Other cooking material | 9 | 2.2 |
| Drinking water source | | |
| River | 2 | 0.5 |
| Public well | 23 | 5.7 |
| Private well | 19 | 4.7 |
| Village pump | 273 | 68.2 |
| Tap water | 43 | 10.7 |
| Other drinking water source | 40 | 10.0 |

Source: OSU survey, 1995.

Socioeconomic indicators of individuals surveyed are shown in Table 3 along with public services offered and used in each village or town. Information collected on house, type of housing and the materials used for the exterior, the floor, and the roof are all useful socioeconomic indicators of the wealth status of the individual. Most villagers own their houses except in Zinder-ville where only 39 percent of the respondents are house owners. Most village houses are built from adobe bricks (77.8 percent), have a concrete floor (51.5 percent), and a traditional roof made up of woven thatch. Corrugated sheet roofing were, however, more predominant in Zinder-ville where up to 58.2 percent

of the respondents had such roofs. In a village setting, such a situation would have been confined to wealthier people. An overwhelming number of respondents (93.7 percent) used wood for cooking, even in major towns like Matameye and Zinder. Running tap water was available to only a few of the respondents residing in the two major towns while the rest of the people in the survey used public or village/town pumps as their main source of drinking water.

Table 4. Mean and Standard Deviations of Selected Individual Income and Asset Indicators of Respondents in Zinder Department

| | Total sample | | CU members | | Non members | |
|------------------------------------|------------------|--------------------|------------------|--------------|----------------|-------------|
| | Mean | Standard Deviation | Mean | SD | Mean | SD |
| Age (in years) | 44 | 13.4 | 44 | 13.4 | 44 | 13.3 |
| Household size | 9 | 6.8 | 10 | 7.7 | 8 | 5.5 |
| Number of constructions | 4 | 3.1 | 5 | 3.7 | 3 | 2.4 |
| Price of land rental | 526 | 3,612.8 | 652 | 4,189.9 | 399 | 2,921.8 |
| Farm Income (FCFA)* | 161,307 | — | 182,283 | — | 140,119 | — |
| 1. Agricultural products | 24,348 | 56,336.4 | 23,585 | 46,617.0 | 25,118 | 64,802.6 |
| 2. Livestock | 96,817 | 187,159.3 | 112,629 | 175,561.2 | 80,845 | 197,344.0 |
| 3. Livestock fattening | 40,142 | 128,292.4 | 46,069 | 148,609.9 | 34,156 | 103,863.4 |
| Off-farm Income (FCFA) | 520,172 | — | 574,073 | — | 465,730 | — |
| 1. Artisan /trade/enterprise | 458,080 | 3,829,419.7 | 481,921 | 2,105,264.2 | 434,000 | 5,007,297.9 |
| 2. Salaries | 55,688 | 181,140.7 | 85,577 | 240,602.0 | 25,499 | 76,315.3 |
| 3. Remittances | 6,404 | 39,484.8 | 6,575 | 32,586.7 | 6,231 | 45,486.7 |
| Physical Asset Value (FCFA) | 1,046,552 | — | 1,732,406 | — | 353,806 | — |
| 1. Livestock | 412,307 | 771,653.2 | 545,860 | 825,930.9 | 277,413 | 688,819.4 |
| 2. Equipment/tools | 19,136 | 42,320.7 | 25,150 | 49,580.1 | 13,061 | 32,440.5 |
| 3. Cereal and other input | 9,840 | 23,530.7 | 14,064 | 29,521.7 | 5,573 | 14,108.1 |
| 4. Housing constructions | 605,269 | 7,663,404.8 | 1,147,332 | 10,795,570.5 | 57,759 | 155,676.3 |

Source: OSU survey, 1995

Note: * Franc CFA (FCFA) is the currency used in Niger and several other Francophone African countries. The average official exchange rate was US \$1 = FCFA 500.

2. Revenue and Income sources

The components of the individual's farm income are presented in Table 4. Although farming is the main occupation for a number of respondents (41.5 percent), revenue from the sale of agricultural products still represented a smaller share of their income base (15 percent) compared to the sale of livestock to supplement their income (60 percent), and sale of fattened livestock raised for later sale (25 percent). The ratio of total off-farm income over farm income was 3.3 indicating that individuals generate more than three times as much income from their off-farm activities than from the sale of agricultural commodities and livestock products. Much of the off-farm income was, however, generated by trade and small enterprise activities, such as, arts and crafts. Salaries made up only 12 percent of the off-farm income, whereas remittance from migrant family members was only 1 percent of the total individual off-farm income (Table 4). Credit union members' revenue from farm and off-farm activities were only slightly higher than those of non-members (Table 4). However, members generated more revenues from the sale of livestock than non-members.

3. Household and Individual Physical Asset Holdings

The main physical asset holdings by the respondents were made up of livestock (40 percent), major tools and equipments used for the individual's activity, agricultural products and other inputs, such as fertilizer, and housing constructions (Table 4). The average number of housing units owned by individuals in the sample was four houses, with a 3.1 standard deviation. Most respondents also owned several durable assets such as radios, television sets, bicycles, motorbikes and even cars. On average, an individual owned a radio for about three years, a television set for about one year, and other more expensive consumer durables for less than a year.

There is a very noticeable difference in the average value of physical assets held by credit union members compared to the non-members. The value of physical assets for members was about five times higher than that for non members (Table 4). Credit union members also held close to twice the value of livestock than that owned by non-members and had visibly more valuable equipment/tools, inputs in stock, and housing units. In fact, the average number of housing units owned by members was 5 compared to 3 for non members. All this evidence highlights the fact that in the Zinder department, CU members appear to be relatively wealthier and to hold a significant amount of their wealth in physical assets.

4. Participation in the Financial Markets

Although individuals still kept the most significant amount of their wealth in physical assets, especially livestock, they also held some savings in financial instruments, either in banks, credit unions, semi-formal institutions, or with the traditional money keeper who, more often than not, was either a friend, a family member, or their spouse. Financial asset holdings of the respondents are shown in Table 5 consisting of savings held in different formal, semi-formal and informal

institutions. Based on the available information³, banks held 10.9 percent of the total sample's average net savings, informal sources had 10.5 percent of net savings kept with money keepers and 15 percent of savings were held in tontines⁴. Credit unions had 30.7 percent of the total current savings, while 32.9 percent of savings were held with other semi-formal savings sources, such as, the Non Governmental Organizations (NGOs) operating in the region. It is worth noting that the amount of savings held in credit unions was larger than the amount held in informal institutions, money keepers and tontines combined.

Respondents still remembered savings held with the Caisse Nationale d'Epargne (CNE), the now bankrupt Niger postal savings system. The average savings amount was FCFA 4,174, although most savers have given up on the possibility of ever getting these funds back.

Although credit union members kept 35.1 of their financial savings as deposits in the CPECs, they were equally involved with the NGOs (36.4 percent) and still saved with informal sources, such as, tontines (11.9 percent) and money keeper (7.2 percent) (Table 5). Of course, non credit union members, who do not have the CPEC alternative, kept their financial assets primarily with informal money keepers (36.2 percent of savings), tontines (39 percent) and the rest was placed in banks (23.1 percent) and semi-formal institutions (1.6 percent) (Table 5).

In general, credit unions members held a significantly higher value of financial assets than non-members. The average total net savings for members was close to 12 times the average amount of net savings held by non-members (Table 5). Credit union members appeared to have a long tradition of saving as members kept relatively higher balances with the defunct CNE than non-members. Thus, the average members' savings in the CNE was found to be FCFA 6,505 compared to FCFA 1,819 as average savings held by non-members.

Considering only the savers in the sample in the Zinder department gives a better idea of the channels most used by depositors (Table 6). All credit unions members are also savers and had an average savings amount of FCFA 31,599 (Table 6). The next widely used channel was the informal sector with 30 accounts held with money keepers and 24 tontine participants accounts averaging FCFA 58,371 and FCFA 104,390 respectively. The semi-formal institutions had nine accounts yielding an average savings amount of FCFA 609,389. The banks' accounts gave an average of FCFA 365,105 for the five formal accounts in the sample.

³ The survey did not have any information on the amount of cash held at home. Also, some credit union members did not know, or did not want to reveal the amount of savings they had in their CPECs. Hence the amounts listed in Table 5 are lower bound estimates.

⁴ Tontines is the term used in Niger for Rotating Savings and Credit Associations or ROSCAs. Tontine is also used in several other African countries to designate these savings groups.

Table 5. Financial Asset Holdings by Source for all Respondents in Zinder Department (Average Value in FCFA)

| | Total sample (N=400) | | CU members (N ₁ =201) | | Non members (N ₂ =199) | |
|--|------------------------|------------------|----------------------------------|------------------|-----------------------------------|------------------|
| | Current balance (FCFA) | % of net savings | Current balance (FCFA) | % of net savings | Current balance (FCFA) | % of net savings |
| Banks | 4,564 | 10.9 | 6,965 | 9.3 | 2,138 | 23.1 |
| CPEC ^a (N=201) | 12,801 | 30.7 | 26,139 | 35.1 | 0 | 0 |
| NGO & other semi-formal | 13,711 | 32.9 | 27,137 | 36.4 | 150 | 1.6 |
| Money keeper | 4,378 | 10.5 | 5,395 | 7.2 | 3,350 | 36.2 |
| Tontine | 6,263 | 15.0 | 8,894 | 11.9 | 3,606 | 39.0 |
| Total net savings^b | 41,717 | 100 | 65,636 | 100 | 5,638 | 100 |
| CNE ^c | 4,174 | -- | 6,505 | -- | 1,819 | -- |
| Loans granted | 13,726 | -- | 12,611 | -- | 14,927 | -- |
| Average gross savings^d | 59,617 | -- | 93,646 | -- | 25,990 | -- |

Source: OSU survey, 1995

Note: ^a CPEC (Caisse Populaire d'Epargne et de Crédit)^b Net savings is the sum of savings from banks, CPEC, other semi-formal institutions, and money keeper.^c CNE (Caisse Nationale d'Epargne)^d Gross savings is the sum of total net savings, CNE, and loans granted

___ not applicable

Table 6. Relative Importance of Channels Used by Savers in Zinder Department.

| | Total sample (N=400) | | | CPEC members (N ₁ =201) | | | Non-CPEC members (N ₂ =199) | | |
|--------------------|----------------------------|----------------------|------------------------|------------------------------------|----------------------|------------------------|--|----------------------|------------------------|
| | Number of savings accounts | Total savings amount | Average savings amount | Number of savings accounts | Total savings amount | Average savings amount | Number of savings accounts | Total savings amount | Average savings amount |
| Banks | 5 | 1,825,524 | 365,105 | 1 | 1,400,000 | 1,400,000 | 4 | 425,524 | 106,381 |
| CPECs ^a | 158 | 4,992,580 | 31,599 | 158 | 4,992,580 | 31,599 | -- | -- | -- |
| NGOs | 9 | 5,484,500 | 609,389 | 7 | 5,454,500 | 779,214 | 2 | 30,000 | 15,000 |
| Money keeper | 30 | 1,751,135 | 58,371 | 13 | 1,084,500 | 83,423 | 17 | 666,635 | 39,214 |
| Tontines | 24 | 2,505,360 | 10,439 | 16 | 1,787,760 | 111,735 | 8 | 717,600 | 89,700 |
| Total | 226 | 16,559,099 | 73,270 | 195 | 14,719,340 | 75,484 | 31 | 1,839,759 | 59,347 |

Source: OSU survey, 1995

Note: ^a Some CPEC members did not remember or did not want to say how much savings they had in their account.

-- Not applicable

In addition to becoming automatic savers once they join the credit union, CPEC members stayed actively involved with the informal sector of money keepers and tontines with 54 informal accounts belonging to credit union members (Table 6). In fact, a significant number of individuals, non-members and members alike, were tontine participants and up to 41.7 percent of the sample belonged to one or several tontines (Table 7). It is interesting to note that more credit union members (45.3 percent) admitted belonging to at least one tontine group compared to 38.2 percent of non-members tontine participants.

Table 7. Uses of Financial Assets and Savings Habits of Respondents in Zinder Department.

| | Total sample | | CU members | | Non members | |
|---------------------------------|--------------|-------------|------------|-------------|-------------|-------------|
| | Frequency | % of sample | Frequency | % of sample | Frequency | % of sample |
| Grant loans to others | 224 | 56.0 | 124 | 61.7 | 100 | 50.3 |
| Buy durables | 269 | 67.2 | 138 | 68.7 | 131 | 65.8 |
| Buy livestock | 199 | 49.7 | 109 | 54.2 | 90 | 45.2 |
| Put in tontines | 167 | 41.7 | 91 | 45.3 | 76 | 38.2 |
| Keep at home | 246 | 61.5 | 107 | 53.2 | 139 | 69.8 |
| Keep in an account | 96 | 24.0 | 85 | 42.3 | 11 | 5.5 |
| Keep in a banks | 13 | 3.2 | 7 | 3.5 | 6 | 3.0 |
| Others* | 20 | 5.0 | 9 | 4.5 | 11 | 5.5 |
| Keep common account with spouse | 33 | 8.3 | 15 | 7.5 | 18 | 9.0 |

Source: OSU survey, 1995

Note: * = Others include: 1. Giving grants to others; 2. Building a new house; 3. Remodeling an old house.

Other popular uses of financial assets underscore the predominant role of informal finance in this world through the provision of loans to others (56 percent of sample), buying durables (67.2 percent), and buying livestock (49.7 percent) as can be seen in Table 7. The high percent granting loans to others are likely building up insurance for their future when they might need loans from others during difficult times. Many respondents (61.5 percent) also acknowledged keeping money at home. More than half of the credit union members (53.2 percent) still keep money at home although that figure is lower than the 69.8 percent of non-members who keep their money at home, hence in an insecure place. About the same number of members and non-members (3 percent) have a bank account with a formal institution. Not surprisingly, as is common throughout Africa, spouses guard their money separately. Only 33 individuals, i.e., 8.3 percent of the whole sample kept common financial accounts with their spouses.

Most loans granted to the individuals came from either the credit unions, an NGO, or the informal sector. No loans were granted by the banks that had branches only in Zinder-ville. The majority of the recorded loans came from the informal sector i.e. 76.5 percent of all granted loans were made by friends, relatives, traders. However, they were relatively small in amount, averaging less than FCFA 60,000 (Table 8). By contrast, the CPEC loans were larger in volume (FCFA 105,000) and averaged 7 months in duration. The NGOs and other semi-formal institutions were granting yet larger loans (FCFA 218,000) with longer repayment terms up to 16 months. NGOs did not really represent competition for the CPEC membership because NGO loans were targeted to a specific clientele such as women.

Table 8. General Characteristics of All Recorded Loans to Respondents in Zinder Department.

| Source | Number of loans ^b (1) | Average loan amount in FCFA ^c (2) | Duration ^d (3) | Calculated Nominal Interest rate in % ^e (4) |
|--------------------------|-------------------------------------|---|------------------------------|---|
| Banks | 0 | 0 | -- | -- |
| Other formal institution | 14 | 218,000 | 16 months | 22 |
| CPEC | 58 | 104,854 | 7 months | 8 |
| NGO ^a | 23 | 26,783 | 11 months | 9 |
| Relative | 123 | 18,423 | 5 months | 0 |
| Friend | 124 | 18,546 | 6 months | 9 |
| Trader | 57 | 63,545 | 5 months | 16 |
| Money lender | 4 | 65 | 5 months | 3 |
| Other informal | 2 | 7,500 | 1 month | 5 |

Source: OSU survey, 1995

Note: ^a NGO (Non Governmental Organization)

^b Number of loans recorded in the survey that have been granted to respondents by source over the past five years

^c Average loan amount is total amount granted/number of loans granted

^d Term of the loan between date when granted and repayment date

^e Interest rate was calculated by [(Amount repaid)/(Amount granted)]*100

-- Not applicable

III. MARADI DEPARTMENT SURVEY RESULTS

The Maradi department is located 640 km. east of Niamey, the capital city, and is the second rural region in which credit unions were established, beginning in late 1993. At the time of the survey (May 1995), there were 14 CPECs in the region. In the Maradi department, the survey was

carried out in four locations: Tibiri, Gabi Mayaki, Roubassao, and Maradi-ville. In each locality, a total of 80 individuals were interviewed, made up of an equal number of credit union members and non-members, and an equal number of men and women. The survey team visited five credit unions in three villages (Roubassao, Gabi Mayaki, and Tibiri) and two credit unions in Maradi-ville. Credit unions were chosen at random among the oldest established in 1993, except for Mintinci, an all female credit union created in May 1994 in Maradi-ville. A total of the 320 individuals were, thus, surveyed in the Maradi department.

The general characteristics of the surveyed villages are presented in Table 9. The Maradi department is predominantly Hausa with the Hausa language spoken by 90 percent of that population. Maradi-ville is a great commerce center and a very dynamic city, known as the economic capital of Niger. Villages in the Maradi department engage year-round, even more than in Zinder, in active trading with Nigeria, supplying much of the imported manufactured goods consumed in Niamey. Villages surveyed in the Maradi department had less than 9,000 inhabitants on average, while Maradi-ville had a population of 110,739 inhabitants (Niger 1988 census).

Table 9. Household and Village Characteristics in Maradi Department

| | Gabi Mayaki | Tibiri | Roubassao | Maradi-ville |
|-------------------------------|-------------|--------|-----------|--------------|
| Sample size | 80 | 80 | 80 | 80 |
| Men in sample | 40 | 40 | 40 | 40 |
| Women in sample | 40 | 40 | 40 | 40 |
| Village/town population | -- | 8,037 | 800 | 110,739 |
| Number of men | | 3,924 | 300 | -- |
| Number of women | | 4,113 | 200 | -- |
| Village active population | -- | -- | 500 | 75,833 |
| Distance from main road in km | 35 | 1 | 46 | 0 |
| Predominant ethnic group | Hausa | Hausa | Hausa | Hausa |

Source: OSU survey, 1995 and Niger Ministry of Economy and Finance 1988 general census of the population.

-- information not available

1. General Information on the Sample

The general socio-economic information derived from the sample of 320 individuals (Table 10) revealed that the typical respondent in Maradi, irrespective of gender, was a head of household (61.6 percent of sample), a farmer (39.4 percent), a herder (29.1 percent) or a trader/entrepreneur (25.0 percent). He/she also typically had a secondary occupation (57.2 percent). People with some

degree of formal education made up 40.6 percent of the sample and only 44 people, i.e., 13.8 percent of the respondents, rented the land they used for crop production. Land rental fees that could reach a maximum of FCFA 50,000, were paid annually to the owner of the land.

Table 10. General Characteristics of the Sample in Maradi Department.

| | Total sample (N=320) | | CU members (N ₁ =160) | | Non members (N ₂ =160) | |
|-----------------------------|-------------------------|-------------|----------------------------------|-------------|-----------------------------------|-------------|
| | Frequency | % of sample | Frequency | % of sample | Frequency | % of sample |
| Household head | 197 | 61.6 | 92 | 57.5 | 105 | 65.6 |
| Principal occupation | | | | | | |
| 1. Farmer | 126 | 39.4 | 54 | 33.7 | 72 | 45.0 |
| 2. Herder | 93 | 29.1 | 52 | 32.5 | 41 | 25.6 |
| 3. Trader/entrepreneur | 80 | 25.0 | 42 | 26.3 | 38 | 23.8 |
| 4. Other | 21 | 6.6 | 12 | 7.5 | 9 | 5.6 |
| Secondary occupation | 183 | 57.2 | 98 | 61.2 | 85 | 53.1 |
| Educated | 130 | 40.6 | 73 | 45.6 | 57 | 35.6 |
| Rent farm land | 44 | 13.8 | 25 | 15.6 | 19 | 11.9 |

Source: OSU survey, 1995

The statistics in Table 10 also show that there were less farmers among the credit union members (33.7 percent) compared to non-members (45 percent). The survey found the same number of herders and traders/entrepreneurs among members and non-members. However, the percentage of members who held a secondary occupation was slightly higher (61.2 percent) compared to non-members (53.1 percent). Also, more educated people were found among members (45.6 percent) compared to 35.6 percent of educated non-members.

The socioeconomic indicators of individuals in Maradi in Table 11 revealed that most people owned the houses they lived in (66.6 percent), and that 70.6 percent used adobe bricks as housing material, whereas the roof was in general the traditional type made of woven thatch covered with mud or clay. The most common type of floor was made of concrete (66.9 percent of sample) and most people had private latrines used exclusively by their household.

Only a few people (20.6 percent) had access to electricity, mainly those living in towns such as Maradi-ville. Wood was still the principal cooking material for the majority of respondents and 97.5 percent of the people used it compared to coal or gas (Table 11). Also, the principal source of

drinking water was from village pumps and public wells. Running tap water was not readily available for village residents and may not have been used by town residents either.

Table 11. Socio-economic Indicators of the Sample in Maradi Department (N=320)

| | Maradi N=320 | |
|------------------------------|--------------|-------------|
| | Frequency | % of sample |
| A. Housing | | |
| Live in own house | 213 | 66.6 |
| B. Construction | | |
| Mud house | 226 | 70.6 |
| Thatch house | 8 | 2.5 |
| Cement blocks | 86 | 26.9 |
| Other construction material | 0 | 0 |
| Mud floor | 106 | 33.1 |
| Cement floor | 214 | 66.9 |
| Other floor | 0 | 0 |
| Corrugated sheet | 116 | 36.2 |
| Traditional roof | 198 | 61.9 |
| Thatch roof | 6 | 1.9 |
| Other roof type | 0 | 0 |
| Private latrine | 235 | 73.4 |
| C. Public Services | | |
| Electricity | 66 | 20.6 |
| Cook w/coal | 0 | 0 |
| Cook w/wood | 312 | 97.5 |
| Cook w/kerosene | 4 | 1.3 |
| Cook w/millet stem | 12 | 3.7 |
| Cook w/gas | 12.00 | 3.70 |
| Other cooking material | 0 | 0 |
| Drinking water source | | |
| River | 0 | 0 |
| Public well | 94 | 29.4 |
| Private well | 4 | 1.2 |
| Village pump | 132 | 41.2 |
| Tap water | 70 | 21.9 |
| Other drinking water source | 6 | 1.9 |

Source: OSU survey, 1995.

2. Revenue and Income Sources

The average respondent in Maradi was found to be 41 years old and had an average household size of eight members, derived his/her revenues from agricultural commodities and livestock sales, as well as from off-farm activities, such as, trade, arts and crafts (Table 12). Off-farm revenues were almost nine times those generated by agricultural production. Also, revenues from livestock sales represented 48.4 percent of all farm income while another 26 percent of farm revenues was attributable to sale of fattened livestock.

Table 12. Mean and Standard Deviations of Selected Individual Income and Asset Indicators of Respondents in Maradi Department.

| | Total sample | | CU members | | Non members | |
|------------------------------------|------------------|--------------------|------------------|--------------|------------------|-------------|
| | Mean | Standard Deviation | Mean | SD | Mean | SD |
| Age (in years) | 41 | 13.1 | 42 | 13.2 | 40 | 13.0 |
| Household size | 8 | 9.1 | 7 | 5.0 | 8 | 11.9 |
| Number of constructions | 4 | 2.9 | 4 | 2.8 | 4 | 3.0 |
| Price of land rental | 613 | 4,400.7 | 1,022 | 5,954.3 | 201 | 1,820.2 |
| Farm Income (FCFA) | 181,436 | — | 199,108 | — | 163,763 | — |
| 1. Agricultural products | 50,048 | 118,634.7 | 64,439 | 135,114.8 | 35,656 | 97,795.9 |
| 2. Livestock | 87,757 | 221,232.7 | 98,569 | 227,030.0 | 76,945 | 215,448.0 |
| 3. Livestock fattening | 43,631 | 231,602.0 | 36,100 | 151,448.7 | 51,162 | 290,801.4 |
| Off-farm Income (FCFA) | 1,603,877 | — | 1,662,841 | — | 1,544,916 | — |
| 1. Artisan/trade/enterprise | 1,261,952 | 12,208,583.4 | 1,573,719 | 16,252,230.0 | 950,186 | 5,891,164.6 |
| 2. Salaries | 332,225 | 3,171,758.4 | 81,705 | 287,222.0 | 582,745 | 4,469,291.6 |
| 3. Remittances | 9,700 | 54,923.2 | 7,417 | 44,842.4 | 11,985 | 63,488.2 |
| Physical Asset Value (FCFA) | 1,798,868 | — | 1,017,163 | — | 2,580,175 | — |
| 1. Livestock | 538,010 | 2,653,423.7 | 377,454 | 1,010,329.1 | 698,567 | 3,612,886.6 |
| 2. Equipment/tools | 45,372 | 325,655.5 | 33,910 | 151,237.7 | 56,834 | 435,468.5 |
| 3. Cereal and other input | 253,585 | 4,331,824.3 | 12,842 | 25,049.0 | 494,329 | 6,126,185.6 |

| | | | | | | |
|--------------------------|---------|-------------|---------|-------------|-----------|--------------|
| 4. Housing constructions | 961,901 | 7,581,499.8 | 592,957 | 2,617,560.5 | 1,330,445 | 10,401,658.7 |
|--------------------------|---------|-------------|---------|-------------|-----------|--------------|

Source: OSU survey, 1995

Much of the off-farm income was generated through arts and crafts, trade, and other micro and small enterprises which made up 79 percent of the off-farm revenues. The rest was distributed among salaries (20 percent) as well as remittances from migrant workers that only represented 1 percent of all off-farm income.

Credit union members generated higher revenues from agricultural activities (FCFA 199,108) compared to an average of FCFA 163,763 obtained by non members (Table 12). One reason was that income from the sale of livestock was higher (1.3 times) for members compared to non-members, although income from livestock fattening was higher for non-members. However, revenue from the sale of farm products was about the same for both groups.

3. Household and Individual Physical Asset Holdings

The most valuable physical assets were housing units, immediately followed by livestock which represented 30 percent of all physical assets. The rest was shared by tools and equipment used by the individual (2.5 percent) as well as other inputs and agricultural products, such as, seed and cereal in storage (14 percent) (Table 12). On average, an individual owned four housing units, possessed several consumer durables (radios, television sets, bicycles, motorbikes, and motor vehicle in a few cases). The average ownership length for a radio was 2.3 years, 1.5 year for a television set, less than a year for a bicycle, a motorbike, and a motor vehicle.

In Maradi department, non-members were relatively wealthier and had assets valued about 2.5 times the physical assets owned by members of credit unions. This stands out in marked contrast to the results in the Zinder department. The value of livestock, tools and equipment, as well as housing units held by non-members in the Maradi department were all close to twice that of members. The value of farm inputs was 41 times higher for non-members although about half of them (45 percent) were farmers compared to one third (33.7 percent) of farmers among credit union members.

4. Participation in the Financial Markets

Formal finance, i.e. banks, played an important role in the individual choice of savings alternatives even though the banks paid only 6 percent annual interest rate on savings, in a country where inflation was 8-15 percent between 1990-1993 and reached 30 percent after the devaluation of the currency in early 1994. The survey found that 96.6 percent of all individuals' net savings and 69.8 percent of credit union members' savings were being kept in bank accounts (Table 13). However, CPEC members kept 17.4 percent of their savings with the credit unions. Non credit union members on the other hand, kept almost all their savings (98.9 percent) with banks. It is worth noting that Banks accounted for a very high share of savings because the amounts held in those accounts

were relatively larger. In fact the highest current balance in a bank account was FCFA 81 million while it was only FCFA 170,000 in a CPEC account. Thus, although fewer (12), the largest accounts were held in banks highlighting the limited outreach of banks into the sample constituencies. Those reached, however, are very wealthy by local standards. Not surprisingly non-members maintained higher average balances in their bank accounts compared to the CPEC accounts.

Table 13. Financial Asset Holdings by Source for all Respondents in Maradi Department (Average Value in FCFA)

| | Total sample (N=320) | | CU members (N ₁ =160) | | Non members (N ₂ =160) | |
|--|------------------------|------------------|----------------------------------|------------------|-----------------------------------|------------------|
| | Current balance (FCFA) | % of net savings | Current balance (FCFA) | % of net savings | Current balance (FCFA) | % of net savings |
| Banks | 395,155 | 96.6 | 44,684 | 69.8 | 745,625 | 98.9 |
| CPEC ^a | 111,143 | 1.3 | 11,143 | 17.4 | 0 | 0 |
| NGO & Other semi-formal | 4,244 | 0.4 | 2,719 | 4.3 | 562 | 0.007 |
| Money keeper | 2,495 | 0.6 | 1,481 | 2.3 | 3,509 | 0.5 |
| Tontine | 5410 | 1.0 | 3,945 | 6.2 | 4,335 | 0.6 |
| Total net savings^b | 408,840 | 100 | 63,972 | 100 | 754,031 | 100 |
| CNE ^c | 3,239 | -- | 6,247 | -- | 231 | -- |
| Loans granted | 125,530 | -- | 48,721 | -- | 246,187 | -- |
| Average gross savings^d | 537,609 | -- | 118,940 | -- | 1,000,449 | -- |

Source: OSU survey, 1995

Note: ^a CPEC (Caisse Populaire d'Epargne et de Cr dit)^b Net savings is the sum of savings from banks, CPEC, other semi-formal institutions, and money keeper.^c CNE (Caisse Nationale d'Epargne)^d Gross savings is the sum of total net savings, CNE, and loans granted

___ not applicable

Table 14. Relative Importance of Channels Used by Savers in Maradi Department.

| | Total sample (N=320) | | | CPEC members (N ₁ =160) | | | Non-CPEC members (N ₂ =160) | | |
|--------------------|----------------------------|----------------------|------------------------|------------------------------------|----------------------|------------------------|--|----------------------|------------------------|
| | Number of savings accounts | Total savings amount | Average savings amount | Number of savings accounts | Total savings amount | Average savings amount | Number of savings accounts | Total savings amount | Average savings amount |
| Banks | 12 | 126,450,000 | 10,537,500 | 5 | 7,149,500 | 1,429,900 | 7 | 119,300,000 | 17,042,857 |
| CPECs ^a | 137 | 1,682,645 | 12,282 | 137 | 1,682,645 | 12,282 | -- | -- | -- |
| NGOs | 5 | 525,000 | 105,000 | 3 | 435,000 | 145,000 | 2 | 90,000 | 45,000 |
| Money keeper | 24 | 798,500 | 33,271 | 5 | 237,000 | 47,400 | 19 | 561,500 | 29,553 |
| Tontines | 31 | 1,324,800 | 42,735 | 13 | 631,200 | 48,554 | 18 | 693,600 | 58,533 |
| Total | 209 | 130,790,945 | 625,746 | 163 | 10,135,345 | 62,180 | 46 | 120,645,100 | 2,622,720 |

Source: OSU survey, 1995

Note: ^a Some CPEC members did not remember or did not want to say how much savings they had in their account.

-- Not applicable

Respondents still recalled the money they saved with the Caisse Nationale d'Epargne (CNE), the now bankrupt Niger postal savings system. The average savings still at the CNE was found to be FCFA 3239, although this is money that is probably lost for ever. Fortunately, that regretful situation does not seem to have eroded people's confidence in the banking system in the Maradi department.

In general, non-members in the Maradi department showed more financial wealth than credit union members. The average net savings for non-members was FCFA 754,031 compared to FCFA 63,972 average net savings amount held by credit union members (Table 13). That is 12.5 times more wealth attributed to non-members. The biggest difference came primarily from holdings with the banks where the average non-member bank account had 13 times more money than the average amount held by members in their banks and credit union accounts combined.

The informal sector accounted for a very small share of the total amount of savings documented with 0.6 percent of total net savings held with money keepers and 1 percent held in tontines (Table 13). However, it is worth pointing out that the informal sector was second only to the CPECs as most used channel for savings purposes. In fact, there was as much money held in tontines as in credit unions (Table 14). Also, the average savings amount was greater in tontines and money keeper accounts than the average amount in CPEC accounts (Table 14).

Table 15. Uses of Financial Assets and Savings Habits of Respondents in Maradi Department.

| | Total sample (N=320) | | CU members (N ₁ =160) | | Non members (N ₂ =160) | |
|---------------------------------|----------------------|-------------|----------------------------------|-------------|-----------------------------------|-------------|
| | Frequency | % of sample | Frequency | % of sample | Frequency | % of sample |
| Grant loans to others | 191 | 59.7 | 102 | 63.7 | 89 | 55.6 |
| Buy durables | 253 | 79.1 | 129 | 80.6 | 124 | 77.5 |
| Buy livestock | 151 | 47.2 | 83 | 51.9 | 68 | 42.5 |
| Put in tontines | 123 | 38.4 | 55 | 34.4 | 68 | 42.5 |
| Keep at home | 227 | 70.9 | 104 | 65.0 | 123 | 76.9 |
| Keep in an account | 94 | 29.4 | 85 | 53.1 | 9 | 5.6 |
| Keep in a banks | 15 | 4.7 | 6 | 3.7 | 9 | 5.6 |
| Others* | 15 | 4.7 | 7 | 4.4 | 8 | 5.0 |
| Keep common account with spouse | 26 | 8.1 | 12 | 7.5 | 19 | 9.0 |

Note: * = Others include: 1. Giving grants to others; 2. Building a new house; 3. Remodeling an old house.

The widespread use of tontines in Maradi was evident with 38.4 percent of the respondents who participated in tontines during the past 12 months (Table 15). Individuals' use of their financial assets also included providing loans to others (59.7 percent), buying durables (79.1 percent), and buying livestock (47.2 percent) (Table 15). Respondents also acknowledged keeping money at home (70.9 percent of sample). Still, 29.4 percent of respondents kept their money in an account such as the CPEC and only 4.7 percent of the people kept money with the banks, although in larger amounts, which explains why more than 90 percent of the individuals' savings recorded in the survey were held in bank accounts. Also, as was expected, only 8.1 percent of the respondents kept a common financial account with their spouse.

Being a credit union member does not preclude participation in informal groups as 34.4 percent of CPEC members, and 42.5 percent of non-members admitted still being involved with tontines (Table 15). A surprising number of credit union members (65.0 percent) still kept money at home compared to an even greater number (76.9 percent) of non-members. While 5.6 percent of non-members held a bank account, 3.7 percent of credit union members had a bank account in addition to their CPEC account.

Table 16. General Characteristics of All Recorded Loans to Respondents in Maradi Department.

| Source | Number of loans ^b (1) | Loan amount in FCFA ^c (2) | Duration ^d (3) | Calculated nominal interest rate in % ^e (4) |
|--------------------------|-------------------------------------|---|------------------------------|---|
| Banks | 4 | 9,325,000 | 6 months | 9 |
| Other formal institution | 9 | 126,889 | 10 months | 0 |
| CPEC | 52 | 42,635 | 5 months | 6 |
| NGO ^a | 17 | 260,853 | 10 months | 9 |
| Relative | 109 | 32,135 | 5 months | 0 |
| Friend | 118 | 40,230 | 5 months | 16 |
| Trader | 49 | 10,000 | 4 months | 0 |
| Money lender | 1 | 11,500 | 3 days | 0 |
| Other informal | 2 | 72 | -- | 0.00 |

Source: OSU survey, 1995

Note: ^a NGO (Non Governmental Organization)

^b Number of loans recorded in the survey that have been granted to respondents by source over the past five years

^c Average loan amount is total amount granted/number of loans granted

^d Term of the loan between date when granted and repayment date

^e Interest rate was calculated by [(Amount repaid)/(Amount granted)]*100

-- Undeterminate

Despite the popularity of banks in Maradi department for large deposits, only four loans were reported to have been granted by the formal sector (Table 16). The majority of the documented loans

came primarily from the informal sector, followed by the credit unions, NGOs, and governmental institutions. The CPECs granted 52 of the 82 loans of the formal and semi-formal sectors, i.e., 63.4 percent of these loans. Bank loans, though few, were larger in volume (FCFA 9,325,000) and averaged 6 months in duration. By comparison, the CPEC loans were smaller in size (FCFA 126,889) and had longer terms, averaging ten months in duration. None of the informal loans had an average amount greater than FCFA 45,000 and were granted for between 3 days to approximately five months.

IV. HIGHLIGHTS FROM THE DESCRIPTIVE STATISTICS

The descriptive statistics from the surveys in Zinder and Maradi departments showed that in general, people derive considerably more income from their off-farm activities in Maradi (FCFA 1,603,877) than in Zinder (FCFA 520,172). That difference came primarily from trade and other enterprise activities that generated close to three times more income in Maradi than in Zinder. Income from agricultural activities was about the same in both departments, only slightly higher in Maradi. The average value of physical assets in Maradi was also higher (FCFA 1,798,868) than in Zinder department (FCFA 1,046,552). Also, in Maradi, people dealt more with the banks for deposit services compared to people in Zinder where the credit unions, and in particular informal financial intermediaries played a larger role in providing financial services to the population. While credit union members appeared to be wealthier in the Zinder department, it was the contrary in Maradi where non-members held more significant wealth both in financial and physical forms.

Informal finance is still prevalent and even predominant in rural Niger and especially in Zinder department. It is unrealistic to assume that the informal financial sector of tontines, money keepers, and money lenders would disappear with the establishment of credit unions in the villages. People are involved in tontines for more than just savings purposes. Tontines serve also a social purpose that the participant values highly. Also it makes sense to diversify your savings sources to keep multiple networks working on your behalf. Credit unions are in fact a complement to informal finance which is limited in both scale and scope. Credit unions offer an alternative for financial intermediation, especially to people who cannot fulfill bank requirements and people who do not qualify for targeted NGOs and government targeted loan programs. To find out if credit unions play a significant role in members access to credit, an econometric model will be used to test access to financial services, specifically access to loans by the 720 respondents in both Zinder and Maradi departments.

V. THE ROLE OF CPECs IN MEMBERS' ACCESS TO FINANCIAL SERVICES

1. Population Access to Financial Services

The majority of the population in both Zinder and Maradi departments still rely extensively on the informal sector for financial services. Money keepers, tontines, traders, friends and family are the most used channels for savings and loans especially in the non-member community. When asked

why they did not join a credit union, non-members overwhelmingly cited insufficient information on credit unions, including their objectives and operations. A few respondents said that they did not have enough income to save.

For credit union members, access to savings services was the overwhelming reason for joining the CPEC. Thus, 80.6 percent of the members in Zinder department and 88.7 percent of the members surveyed in Maradi department ranked savings security as the number one reason for joining the credit union (Table 17). Interest earned on deposits was less of a concern by comparison. Thus, 34 percent of people in Zinder, and 46 percent in Maradi listed interest earned as one of the most attractive factors in becoming a credit union member. Loan access ranked as the second most important reason for becoming a credit union member. In the Zinder department, 70.6 percent of members and 76.2 percent in the Maradi department responded that getting a credit union loan was one of the most important reasons for becoming a member.

Table 17. Most Important Reasons for Joining the Credit Unions in Zinder and Maradi Departments.

| | CPEC members Zinder (N=201) | % of sample | CPEC members Maradi (N=160) | % of sample |
|----------------------|--------------------------------|-------------|--------------------------------|----------------|
| Deposits security | 162 | 80.6 | 142 | 88.7 |
| Interest earned | 68 | 33.8 | 74 | 46.2 |
| Closeness | 38 | 18.9 | 54 | 33.7 |
| Peer pressure | 41 | 20.4 | 48 | 30.0 |
| Loan access | 142 | 70.6 | 122 | 76.2 |
| Confidentiality | 129 | 64.2 | 95 | 59.4 |
| Third party pressure | 13 | 6.5 | 18 | 11.2 |
| Other* | 16 | 8.0 | 16 | 10.0 |

Note: * = Other reasons include liking the CPEC; Because it is part of the village; Chosen by the villagers to be a committee member; Can withdraw any time; The cooperative spirit;

Access to loans is defined as the ability of the individual to obtain credit from financial intermediaries. The literature on individual access to credit provides support to the notion that access to loans is determined by demand and supply conditions in financial markets subject to individual, household, and environmental characteristics. Some authors maintain that loan access is principally measured by loan amount, number of loans, and loan maturity granted to the individual (Abiad, 1994). It should be recognized instead that access to credit is highly dependent on a feasible match between a borrower and a lender. The individual borrower's choice is based not only on market conditions, but on a self-financing capacity as well. Individuals also chose credit contracts that best fit their expectations for a wide range of reasons including insurance purposes (Ouattara, 1994). Iqbal (1986) notes that households have interlinked production and consumption decisions and outcomes

because they have both producer and consumer characteristics. Thus, farmers and other individuals make decisions about borrowing, based not only on market conditions determining their production, but also on their own savings or self-financing capacities. Several other authors including Clar de Jesus and Cuevas (1988), and Iqbal (1989) note that these characteristics may be used by lenders as screening devices for credit worthiness, causing the lender to grant or refuse the loan.

2. The Econometric model

The hypothesis that borrowers possess and operate under certain individual, household and/or environmental characteristics that would facilitate or deter their access to loans can be represented in the following econometric model:

$$= \alpha + \beta_1 AGE + \beta_2 AGE^2 + \beta_3 GENDER + \beta_4 HHEAD + \beta_5 HSIZE + \beta_6 I \\ \beta_7 MBCPEC + \beta_8 FARMER + \beta_9 LASSET + \beta_{10} PHASSET + \beta_{11} TONTINE \quad (1)$$

Where the Greek characters α and β_i are the parameters of the model to be estimated, and ϵ is the error term.

A. Definition of Variables Used in the Model

LOAN is the dependent variable and is the value of all loans received by the individual from all sources. Only loans granted in the past year starting January 1st, 1994 were considered in the analysis in an effort to be consistent with other individual and household asset values obtained for the same time period.

The individual and household characteristics are represented by quantitative variables such as AGE and AGE2 (square of the age of the respondent) that is also a measure of risk aversion. AGE is expected to be positively related to borrowing because an older person has more chances to be granted a loan especially if the individual has been living in that particular location for a long time. A negative relationship of AGE2 with the LOAN variable would mean that the individual is risk averse, that is, the older he/she becomes, the less borrowing activities he/she engages in. The size of the individual household is measured by the variable HSIZE i.e. the number of people in the household.

Several other individual characteristics are represented by dummy variables such as GENDER which indicates whether the individual is male or female. The variable HHEAD indicates whether or not the respondent is a head of household. Whether or not the individual has received any formal education is represented by the variable EDUC. The variable MBCPEC determines if the individual is a member of the credit union. TONTINE indicates if the individual is an active tontine participant. FARMER indicates whether farming is the individual's primary occupation.

The individual wealth variables are represented by LASSET which is the value of all the individual's liquid assets and, PHASSET which is the value of the individual's physical assets.

LASSET is the sum of individual income, revenues, and the amount of savings held in all institutions. PHASSET is the value of all livestock, tools and equipment, and value of housing units owned by the individual.

The environmental variable is represented by DEPT which takes a value of one if the individual is from the Zinder department and zero if he/she is from the Maradi department.

B. Information on Sources of Loans Used in the Estimation

The general characteristics of the loans used in the econometric model, i.e. loans granted from January 1st, 1994, are presented for both credit union members and non-members in Table 18 for Zinder respondents and Table 19 for Maradi respondents. Loans granted to CPEC members in Zinder department came principally from credit unions. They represented 67.5 percent of the total amount (FCFA 8,887,045) of loans granted from all sources (Table 18). There were 52 credit union loans out of a total of 178 loans granted to members which represented 29 percent of the number of loans granted. By contrast, the number of informal loans (107) represented 60 percent of the total number of loans. However, the average CPEC loan (FCFA 115,279) was twice the size of the average NGO loan and 6.5 times larger than the average informal loan. NGO loans represented 11.2 percent of total loan amount granted while informal loans made up 21.3 percent of the total amount of loans to members. No respondent received any formal institution loans during that period.

Table 18. General Characteristics of Loans Granted from January 1994 to March-April 1995 to Respondents in Zinder Department.

| CPEC members | | | | |
|-------------------------------|-------------------------------------|---|---|--|
| Source | Number of loans ^c (1) | Loan amount in FCFA ^d (2) | Average loan amount ^e (3) | % of total loan amount granted ^f (4) |
| Banks | 0 | 0 | 0 | 0 |
| NGOs ^a | 19 | 996,000 | 52,421 | 11.2 |
| CPECs | 52 | 5,994,500 | 115,279 | 67.5 |
| Informal lenders ^b | 107 | 1,896,545 | 17,725 | 21.3 |
| Total members loans* | 178 | 8,887,045 | 49,927 | 100 |
| Non-CPEC members | | | | |
| Banks | 0 | 0 | 0 | 0 |
| NGOs ^a | 11 | 317,000 | 28,818 | 8.7 |
| CPECs | -- | -- | -- | -- |
| Informal lenders ^b | 135 | 3,343,941 | 24,770 | 91.3 |

| | | | | |
|--------------------------|-----|-----------|--------|-----|
| Total non-members loans* | 146 | 3,660,941 | 25,075 | 100 |
|--------------------------|-----|-----------|--------|-----|

Source: OSU survey, 1995

Note: ^a NGOs i.e. Non Governmental Organizations also include other semi-formal lenders such as cooperatives.

^b Informal lenders include friends and family, as well as money lenders and trader-lenders

^c Number of loans granted over the past year starting in January, 1994

^d Total loan amount granted by source

^e Average loan amount is (2)/(1)

^f (4) is (2)/* (total loan amount)

-- not applicable

Non-members in Zinder department were almost exclusively serviced by the informal sector which granted 91.3 percent of the total amount of loans received by non-members (Table 18). The NGO community was responsible for 11 of 146 loans i.e. 7.5 percent of the number of loans and 8.7 percent of the amount of loans granted. The average loan size to non-members turned out to be FCFA 25,075 from both the informal and NGO sources.

Because banks did not represent an alternative to loan services for respondents in Zinder, members and non-members alike, informal financial intermediaries had to play an even greater role especially for non-members. It is worth noting that the NGO community was reaching out to members and non-members almost equally although NGO loans to credit union members appeared to be slightly larger in value. Without a doubt, credit unions members recognized the additional source of financing provided by the CPECs and seemed to be taking advantage of available credit union loan services.

In the Maradi department, credit union members received 49 loans i.e. 31 percent of the total number of 159 loans granted to that group. CPEC loans amounted to 31.1 percent of the total amount of loans granted to members. Loans from the NGO community accounted for 13 percent of the total amount (Table 19). The informal sector was responsible for 104 loans i.e. 65 percent of the number of loans that represented 55.9 percent of the total amount received by members. Loans from the NGO community, although fewer, were larger in amount with an average loan size of FCFA 42,694 for all six loans granted. The credit union loans were only slightly larger than informal loans, averaging FCFA 42,694 compared to an average loan size of FCFA 36,207 from informal lenders.

Non-members were the only group of respondents who received some bank loans during the past year i.e. from January 1, 1994. In fact, the two loans (1.6 percent of the number of loans) granted by the formal sector represented 74.1 percent of the total amount granted to all non-members (Table 19). The average loan size from the bank was FCFA 8.5 million compared to FCFA 195,000 for the NGO community and FCFA 39,042 for the informal sector. Thus, even though the informal sector provided 112 loans i.e. 92 percent of all 122 loans granted to non-members, its share of the total amount was much smaller because the average bank loan was 218 times bigger. The NGO community was equally involved with members and non-members in Maradi department, granting each group almost the same number of loans although non-members' loans were 1.3 time larger.

Also NGO loans in the Maradi department were much higher than in Zinder implying that these are different NGOs serving distinctly different constituencies.

In short, non members were most often serviced by the informal financial sector than their credit union counterparts both in Maradi and Zinder department. More than 90 percent of non-member loan transactions were made through the informal sector compared to about 60 percent of member transactions in both departments. For those who could not access any bank or NGO loan, the CPEC fortunately was able to meet some of their demand, provided they were members of the credit union.

Table 19. General Characteristics of Loans Granted from January 1994 to March-April 1995 to Respondents in Maradi Department.

| CPEC members | | | | |
|-------------------------------|-------------------------------------|---|---|--|
| Source | Number of loans ^c (1) | Loan amount in FCFA ^d (2) | Average loan amount ^e (3) | % of total loan amount granted ^f (4) |
| Banks | 0 | 0 | 0 | 0 |
| NGOs ^a | 6 | 874,500 | 145,750 | 13.0 |
| CPECs | 49 | 2,092,000 | 42,694 | 31.1 |
| Informal lenders ^b | 104 | 3,765,600 | 36,207 | 55.9 |
| Total members loans* | 159 | 6,732,100 | 42,340 | 100 |
| Non-CPEC members | | | | |
| Banks | 2 | 17,000,000 | 8,500,000 | 74.1 |
| NGOs ^a | 8 | 1,560,000 | 195,000 | 6.8 |
| CPECs | -- | -- | -- | -- |
| Informal lenders ^b | 112 | 4,372,730 | 39,042 | 19.1 |
| Total non-members loans* | 122 | 22,932,730 | 187,973 | 100 |

Source: OSU survey, 1995

Note: ^a NGOs i.e. Non Governmental Organizations also include other semi-formal lenders such as cooperatives.

^b Informal lenders include friends and family, as well as money lenders and trader-lenders

^c Number of loans granted over the past year starting in January, 1994

^d Total loan amount granted by source

^e Average loan amount is (2)/(1)

^f (4) is (2)/* (total loan amount)

-- Not applicable

C. Results of the Econometric Estimation

The single equation model to determine access to loans was estimated using a TOBIT maximum likelihood method due to the nature of the data. Since no borrowing is observed, i.e., LOAN=0 for people who did not participate in the credit market, the model becomes censored. A censored model is one in which we have information on the independent variables even when the dependent variable is zero. Censored models are known as Tobit models and call for the Maximum Likelihood Estimation (MLE) method. Information on the two loans received from the formal banks were dropped from the estimation. Due to the very large values of these loans, they constituted outliers that would have greatly influenced the outcome of the estimation. The results of the model estimation are presented in Tables 3.20 and 3.21. The statistics and definitions of the variables used in the model are in Table 20. The Tobit results of the LOAN equation are shown in Table 21. Several variables are significant at either 1, 5, or 10 percent levels:

- LASSET is negatively related to borrowing and significant at the 1 percent level. This indicates that wealthier people borrow less because they have greater self-financing ability.
- Both AGE and AGE2 variables are significant at the 10 and 5 percent levels respectively. AGE is positive as expected and implies that relatively older people who demand a loan have a better chance of receiving it. This is also because age can be used as an information variable as, in many cases, it gives an idea of how long the person has been living in the village/town or has known the lender. Information asymmetries are reduced for parties who have known each other for some time, thus, reducing any principal-agent problem⁵. AGE2 is used as a proxy for risk aversion and indicates that respondents in the survey are risk averse rather than risk takers.
- HHEAD is positive and highly significant at the 5 percent level, indicating that heads of household are more likely to demand and secure a loan. A head of household is generally more likely to borrow to fulfill his responsibilities of meeting the demand of household members as well as for investment purposes. Also, because the head of household has control over household assets, he/she has better chances of being granted the loan as these assets may be used as collateral.
- EDUC is positively related to borrowing and significant at the 5 percent level. This means that individuals who have received some formal education have a better chance of obtaining a loan. In general, education is expected to be positively related to loans from formal institutions and even semi-formal institutions, such as, the CPECs as the formal lender may view education as “an indicator of borrower’s attitude towards risk and the type of opportunities available to the individual” (Quiros-Rodrigues, 1991). The sometimes cumbersome and long formal loan application processes are better understood by an educated

⁵ For a discussion of asymmetric information problems and credit rationing, see Stiglitz and Weiss. "Credit Rationing in Markets with Imperfect Information", American Economic Review, 1981.

individual. Also, banks view an educated borrower to have greater ability to adapt to change, thus be a good entrepreneur.

- MBCPEC is positive and significant at the 5 percent level, meaning that CPEC members have a better chance of receiving a loan than non-members. This is also an indication that the credit unions are offering an alternative to people in places where a CPEC is located and because the loans made by credit unions are smaller in size than those from formal institutions, it can safely be said that the credit unions are reaching a clientele that would otherwise not have been served by the formal financial market. Being a member of a credit union opens up an additional channel for loans besides the informal sector and for members who do not qualify for targeted NGO and government loans.
- TONTINE is positive and highly significant at the 1 percent level. This indicates that tontine members have a better chance of obtaining a loan, than those who were not members of such savings groups. A member in a tontine is assured to receive at least a hand (total amount of money collected from all members) in a cycle. Also, tontines allow individuals to socialize and know each other more intimately, increasing members chances of getting loans from each other. Tontine deposits may also work as implicit collateral for their members, when dealing with a potential lender, especially an informal trader-lender.
- DEPT is negative and significant at the 10 percent level, and implies that people in Maradi department have a better chance of obtaining a loan compared to those in Zinder. As the descriptive statistics have shown earlier, respondents in Maradi received larger loans both from NGOs and the informal sources than people in Zinder department.

Table 20. Summary of Statistics and Variables Used in Regression.

| Variable | Definition | Mean N=720 | Standard Deviation |
|-------------------------------|--|-----------------|-----------------------|
| LOAN | Value of all loans granted from January, 1994 | FCFA 35,108 | FCFA 121,540 |
| LASSET | Value of all liquid assets i.e. income and other financial assets such as savings and deposits | FCFA 13,711,500 | FCFA 9,580,200 |
| PHASSET | Value of all physical assets i.e. tools/equipment, inputs, constructions | FCFA 1,380,800 | FCFA 10,779,000 |
| AGE | Age of respondent | 43 | 13.3 |
| AGE2 | Age square of respondent | 1996 | 1241.8 |
| GENDER (Dummy variable) | Gender of respondent 1 if male | 0.5 | 0.5 |

| | | | |
|--------------------------------|---|-----|-----|
| HHEAD (Dummy variable) | 1 if respondent is head of household | 0.6 | 0.5 |
| EDUC (Dummy variable) | 1 if respondent has received some formal education | 0.4 | 0.5 |
| MBCPEC (Dummy variable) | 1 if respondent is a CPEC member | 0.5 | 0.5 |
| HSIZE | Respondent's household size | 8.4 | 7.9 |
| FARMER (Dummy variable) | 1 if respondent is a farmer | 0.4 | 0.5 |
| TONTINE (Dummy variable) | 1 if respondent is a tontine member | 0.4 | 0.5 |
| DEPT (Dummy variable) | 1 if respondent is from Zinder department | 0.5 | 0.5 |

Source: OSU survey, 1995

Table 21. Results of the Tobit Loan Access Model for Respondents in both Zinder and Maradi Departments (N=720).

| Variable | Estimated coefficient | Standard Error | T-Ratio |
|----------|-----------------------|----------------|----------|
| CONSTANT | -1.2350*** | 0.44047 | -2.8038 |
| LASSET | -0.11796E-07*** | 0.50818E-08 | -2.3212 |
| PHASSET | 0.37800E-08 | 0.48721E-08 | 0.77584 |
| AGE | 0.039234* | 0.020305 | 1.9322 |
| AGE2 | -0.00048834** | 0.00021559 | -2.2651 |
| GENDER | 0.098725 | 0.11849 | 0.83316 |
| HHEAD | 0.26118** | 0.11466 | 2.2778 |
| EDUC | 0.20113** | 0.092277 | 2.1796 |
| MBCPEC | 0.17332** | 0.082521 | 2.1003 |
| HSIZE | 0.0070200 | 0.0073804 | 0.95116 |
| FARMER | -0.072824 | 0.089121 | -0.81714 |

| | | | |
|-------------------------|------------|----------|---------|
| TONTINE | 0.24432*** | 0.093291 | 2.6189 |
| DEPT | -0.14374* | 0.083513 | -1.7211 |
| Log likelihood function | -6103.4476 | -- | -- |

Source: OSU survey, 1995

Note: *, **, *** indicate significance at 10, 5 and 1 percent respectively.

It is worth noting that, although the GENDER variable is positive, it is not significant in the model indicating women are not being discriminated against in loan access. This is the result of women in the sample being targeted for NGO loans, as well as the all-female credit unions allowing more women to secure loans. In fact, 88 percent of all NGO loans were granted to women, while about half the CPEC loans went to women.

The main findings from the econometric model is that demand for and access to loans in Niger, especially in the departments of Maradi and Zinder, are primarily subject to the individual disposable income i.e self-financing ability, the individual's level of risk aversion, his/her creditworthiness proxied by age, the individual's level of education, and membership in savings and credit associations such as tontines and credit unions. Obviously, CPECs are providing an alternative access to credit, especially for the rural population of Zinder and Maradi department, where banks do not have branches and informal finance is, thus, the only financial intermediary.

VI. CONCLUDING COMMENTS

The main finding from this survey of financial markets in the departments of Zinder and Maradi is that informal finance is still prevalent and even predominant in rural Niger. People still rely heavily on the informal sector for both savings and loans services. Tontines which play an important social function would not be expected to disappear with the advent of credit unions. What is encouraging is the realization that credit unions are in fact complementing the informal sector. They are also providing an alternative for financial intermediation, especially to people who cannot fulfill bank requirements and people who do not qualify for targeted NGO loan programs.

The role of credit unions in the financial markets of Niger, as shown by the econometric results, reveal that access to loans is even more probable for those who are members of credit unions. On the one hand, loan sizes in the credit unions are relatively smaller than those of the formal sector, meaning that credit unions are providing access to loans for a segment of the population that would not have been serviced otherwise by formal financial institutions. On the other hand, the average credit union loan size is larger than that of the informal sector, meaning that the CPEC is a welcome complement and alternative financial intermediary for members.

The survey also revealed that individuals are even more interested in deposit security offered by CPECs than the opportunity for loans. Because savings are valued highly by the members, more emphasis should be placed on the savings mobilization aspect and attract more savers by offering other deposit instruments such as term deposits that pay attractive rates of interest. For the future extension of the CPEC membership base, it should not be too difficult for credit unions to attract those who are not yet members. As revealed by the study, the only obstacle to join credit unions is a lack of information.

The model did not find that women had less access to loans than men. This result is encouraging because it is essential that all financial intermediaries, including credit unions, make a point of giving the same loan access to women as to men. This can be accomplished in several ways, first by encouraging women's participation in leadership roles, and, second, by making available financial products that women desire such as smaller and shorter loans, and possibly different collateral requirements, especially in gender-mixed credit unions.

REFERENCES

- Abiad, Virginia G. 1994. "Linking Formal and Informal Financial Intermediaries in Underdeveloped Countries: Evidence from Indonesia", Draft, American University, (February).
- Adams, Dale, W 1992. "Using Contracts to Analyze Informal Finance" Economics and Sociology Occasional (ESO) Paper No. 1972, Department of Agricultural Economics, The Ohio State University.
- Baydas, Mayada et al. 1992. "Discrimination Against Women in Formal Credit Markets: Reality or Rhetoric?" Economic and Sociology Occasional (ESO) Paper No. 1989, Department of Agricultural Economics, The Ohio State University.
- Clar de Jesus, Raquel B., and Carlos E. Cuevas. 1988. "The Demands for Funds Among Agricultural Households in The Philippines" ACPC-PIDS-OSU Sponsored Seminar-Workshop on Financial Intermediation in the Rural Sector. (September).
- Cuevas, Carlos, E. 1992. "Potentiel de Développement des Caisses Populaires d' Epargne et de Crédit dans la Région du Niger." Report to the World Council of Credit Unions (WOCCU), (January).
- Government of Niger. 1991. "Annuaire Statistique: Series Longues." Ministry of Plan.
- Iqbal, Farrukh. 1986. "The Demand and Supply of Funds among Agricultural Households in India" Agricultural Households Models, Inderjit Singh, Lyn Squire, and John Strauss, Eds. The John Hopkins University Press, Baltimore, Maryland.
- Iqbal, Farrukh. 1989. "Subsidies, Rationing and Access: The Case of Concessional Agricultural Credit." The World Bank, Washington, D.C., Draft.
- Ouattara, Korotoumou. 1994. "Financial Innovation and Women in Rural Africa: The Village Savings and Credit Associations in The Gambia." Paper Presented at the American Agricultural Economics Association (AAEA) annual meeting in San Diego, California, (August).
- Ouattara, Korotoumou. 1994. "Credit, Risk, and Insurance in Rural Gambia." Unpublished Ph.D. Dissertation, The Ohio State University.
- Stiglitz, Joseph, E., and Andrew Weiss. 1981. "Credit Rationing in Markets with Imperfect Information." American Economic Review 393-411.

